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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/660,811	09/13/2000	Mark S. Knighton	004956.P003	8160

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08/26/2003

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EXAMINER

BUGG, GEORGE A

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 08/26/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/660,811

Applicant(s)

KNIGHTON ET AL.

Examiner

George A Bugg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-4, 8-15, and 18-29 have been considered but are moot in view of the new ground(s) of rejection.
2. With regard to Applicant's arguments, pertaining to claims 5-7, and 16-17, that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). It should also be noted that both the system of Pito, and that of Vellacott, are related art, in that both deal with digital imaging.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 8, 9, 12-15, 18, 19, and 27-29, are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,831,621 to Pito.

1. As for claims 1, 13, and 27, Pito discloses, in column 5, lines 24-48, and in Figure 1, a camera or scanner (Element 10) which scans three dimensional object data. The scanner shown in Figure 1 is equivalent to the claimed digitizer, since they perform the same function. The orientation fixture, as claimed, is also shown in Figure 1, as Element 14. As the turntable rotates, the orientation of the object is changed from a first position to a second position, revealing a first aspect, or view, of the object at a first orientation, and revealing a second aspect, or view, of the object at a second orientation, relative to the scanner, or digitizer. Pito further discloses computer control and software, which is utilized to determine the "Next Best View". In other words, the software performs mathematic manipulation on the scanned images of the object, to determine what area of the object to look at next, and thereby automatically repositions the turntable, to obtain the desired object orientation. **Furthermore, as stated in column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between to points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined. It is the interpretation of the Examiner, that Figure 1, discussed in column 5, shows the digitizer and orientation fixture, as independent units, that can be connected as one, through the use of software and computer control. While the reference does not specifically teach independents units, or integrally coupled as**

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a single unit, as claimed in claims 1 and 13 respectfully, it would have been obvious to one of ordinary skill in the art to combine independent units into a single unit, for the purpose of creating a portable system, as well as reducing the overall size of the system. It should be further noted, that Applicant describes physically independent units, on page 5 of the specification, as two devices with no physical coupling. It stands to reason then, that two units coupled together, either electrically, or through a host computer are integrally coupled as one unit. However, Applicant's Figure 3, shows the digitizer and the orientation fixture integrally connected, yet each piece is separately labeled as elements 270 and 280. These claim limitations are obvious for the reasons stated above, and are a matter of semantics. Additionally, claim 27 recites a data analyzer for identifying points of interest in the data collected, wherein the digitizer and the orientation fixture automatically rescan a portion of the object, corresponding to the point of interest, whereby the three dimensional model of a portion of the object is adjusted based on the rescan. In column 10, lines 40-65, Pito discloses indices (i) which correspond to scanned images, (i.e. points of interest) and that multiple scans of the object take place, based upon the number of indices to be checked. Pito further teaches, upon rescan, the three dimensional model of the object is updated. It should also be noted, that column 10, lines 65-67 disclose that poorly sampled surfaces can be resampled, or scanned, with higher accuracy. In other words, areas can be rescanned to improve image quality.

2. Regarding claim 2, in column 1, lines 23-33, Pito discloses measuring the distance between the range camera, or digitizer, and the surface of an object, which is

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equivalent to determining the position of the orientation fixture, relative to the digitizer, since the object to be scanned is sitting atop the orientation fixture, or turntable.

Furthermore, as stated in column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between to points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined.

3. As for claims 3 and 14, column 5, lines 57-67, Pito discloses a breakdown angle of a scanner, which is determined from the calibration of the scanner, or digitizer. While Pito does not specifically claim automatic calibration, calibration is taught. In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (Appellant argued that claims to a permanent mold casting apparatus for molding trunk pistons were allowable over the prior art because the claimed invention combined "old permanent-mold structures together with a timer and solenoid which automatically actuates the known pressure valve system to release the inner core after a predetermined time has elapsed." The court held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art.).

4. With regard to claims 4 and 15, column 10, lines 1-9, teach the use of a computer and software, or host, for modeling a three dimensional representation of an object.

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5. As for claims 8, 9, and 18, since Figure 1 shows the orientation fixture, and the digitizer as separate entities, it is inherently taught that each would have their own self-contained power source. Furthermore, self-contained power sources make systems portable, which is not patentably significant. In re Lindberg, 194 F.2d 732, 93 USPQ 23 (CCPA 1952) (Fact that a claimed device is portable or movable is not sufficient by itself to patentably distinguish over an otherwise old device unless there are new or unexpected results.).

6. As for claims 12 and 19, in column 5, lines 23-32, Pito discloses the orientation fixture, Element 14 of Figure 1, as a turntable.

7. With regard to claim 28, in column 11, lines 1-67, Pito discloses control parameters, which can effect the resolution, field of view, focus, magnification, and size of an image, during scan or rescan, as well as resampling poorly sampled surfaces, to achieve higher accuracy (i.e. higher resolution). Since the appearance of an image may be altered through the use of control parameters, the method of capturing the images is also different, because the number of scans would vary, depending on the detail to be imaged.

8. Claims 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,799,082 to Murphy et al.

9. As for claims 20 and 23, in column 15, lines 6-31, Murphy discloses freezing or locking image data, and further preventing transmission to another person or facility (i.e. remotely), except those who are authorized, and implement the proper request for downloading the information. Furthermore, the fact that information can be transmitted

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back and forth, is itself a teaching of a distributive network. While the Murphy reference may not specifically disclose unlocking and image-capturing system, it is the contention of the Examiner that the frame lock mechanism, which prevents image data from being downloaded, serves the same purpose. Therefore, it would have been obvious to one of ordinary skill in the art to employ the locking mechanism of Murphy, for the purpose of maintaining an uncompromised network.

10. With regard to claims 21 and 22, column 13, lines 53-67, disclose a camera system, which determines position information (i.e. location coordinates, angular orientation coordinates, and distance to the object) or three dimensional image data. Claim 16 of Murphy discloses an image-capturing device, which can be reprogrammed remotely.

11. As for claims 24-26, Murphy discloses, in column 13 lines 30-52, and column 15, lines 19-47, encrypting algorithms, and decryption using position parameters of the object, as well as storage limitations and uploading encrypted image data.

12. Claims 5-7, 16-17, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,831,621 to Pito, in view of International Publication No. WO 96/02106 to Vellacott.

13. As for claims 5-7, 16-17, and 30, Pito discloses, in column 5, lines 24-48, and in Figure 1, a camera or scanner (Element 10) which scans three dimensional object data. The scanner shown in Figure 1 is equivalent to the claimed digitizer, since they perform the same function. The orientation fixture, as claimed, is also shown in Figure 1, as Element 14. As the turntable rotates, the orientation of the object is changed from a first

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position to a second position, revealing a first aspect, or view, of the object at a first orientation, and revealing a second aspect, or view, of the object at a second orientation, relative to the scanner, or digitizer. Pito further discloses computer control and software, which is utilized to determine the "Next Best View". In other words, the software performs mathematic manipulation on the scanned images of the object, to determine what area of the object to look at next, and thereby automatically repositions the turntable, to obtain the desired object orientation. **Furthermore, as stated in column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between to points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined. It is the interpretation of the Examiner, that Figure 1, discussed in column 5, shows the digitizer and orientation fixture, as independent units.** Column 10, lines 1-9, teach the use of a computer and software, or host, for modeling a three dimensional representation of an object, while Pito fails to teach communicating over a wireless link, as well as transmitting data remotely, pages 8 and 9 of the Vellacott reference discloses the use of LAN systems, wireless communications, as well as remote transmission. It would have been obvious to one of ordinary skill in the art to combine the teachings of Vellacott and Pito, for the purpose of creating a more robust three-dimensional scanning system.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George A Bugg whose telephone number is (703) 305-2329. The examiner can normally be reached on Monday-Thursday 7:30 - 6:00.

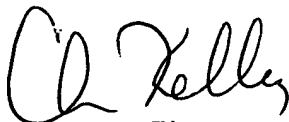
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher S Kelley can be reached on (703) 305-4856. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.

George A Bugg
Examiner
Art Unit 2613

GAB

August 21, 2003


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